

# TYPE APPROVAL CERTIFICATE

**This is to certify:**

**That the Axial Restraining Pipe Couplings**

with type designation(s)

**NORMA GRIP/NORMA GRIP E /+GF+ GRIP/+GF+ GRIP E and fireproof versions FP or RFP**

Issued to

**NORMA Germany GmbH**  
**Maintal-Dörnigheim, Germany**

is found to comply with

**Det Norske Veritas' Standards for Certification 2.9 No. 5-792.20**

**Det Norske Veritas' Rules for Classification of Ships**

**Offshore Standard DNV-OS-D101, Marine and Machinery Systems and Equipment**

**Application :**

**The coupling may be used for locking connection of metal pipes in the systems as mentioned in the certificate.**

<b>Type:</b>	<b>Temperature range:</b>	<b>Max. working press.:</b>	<b>Sizes:</b>
<b>NORMA GRIP/NORMA GRIP E /+GF+ GRIP/+GF+ GRIP E</b>	<b>See certificate</b>	<b>2,5 -16 bar (dep. size and type, see cert.)</b>	<b>26,9- 406,0 mm pipe OD (dep. type, see cert.)</b>
<b>fireproof versions FP or RFP</b>	<b>See certificate</b>	<b>2,5 -16 bar (dep. size and type, see cert.)</b>	<b>26,9 - 406,4 mm</b>

This Certificate is valid until **2018-06-30**.

Issued at **Høvik** on **2015-04-30**

DNV GL local station: **Essen**

for **DNV GL**

Approval Engineer: **Adel Samiei**

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**Marianne Spæren Marveng**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Certificate No: **P-15212**  
 File No: **792.41**  
 Job Id: **262.1-000442-6**

## Product description

Slip-on joint Grip and Grip E and fireproof versions FP or RFP

Materials:

Material combination	W2		W4		W5	
	DIN	AISI	DIN	AISI	DIN	AISI
Housing	1.4301	304	1.4301	304	1.4571	316 Ti
Bolts	1.7220 / 1.4404	4140H / 316L	1.4404	316 L	1.4404	316 L
Massive trunnion	1.0737	12 L 14	1.4301	304	1.4401	316
Hollow trunnion	-	-	1.4571	316 Ti	1.4571	316 Ti
Formed hollow trunnion	1.0580	1024	1.4571	316 Ti	1.4571	316 Ti
Grip ring	1.4310	301	1.4310	301	1.4310	301
Band insert	1.4571/ plastic	316 Ti/ plastic	1.4571/ plastic	316 Ti/ plastic	1.4571/ plastic	316 Ti/ plastic

## Application/Limitation

The joints can be used in class II and III piping systems for the following pipelines according to IACS P2:

Systems			Systems		
Flammable fluids (Flash point ≤ 60 °C)			Fresh water		
1	Cargo oil lines	+ 5)	21	Cooling water system	+ 1)
2	Crude oil washing lines	+ 5)	22	Condensate return	+ 1)
3	Vent lines	+ 3)	23	Non-essential system	+
Inert gas			Sanitary/Drains/Scuppers		
4	Water seal effluent lines	+	24	Deck drains (internal)	+ 4)
5	Scrubber effluent lines	+	25	Sanitary drains	+
6	Main lines	+ 2) 5)	26	Scuppers and discharge (overboard)	÷ (no)
7	Distribution lines	+ 5)			

Flammable fluids (Flash point > 60°C)			Sounding/ vent		
8	Cargo oil lines	+ 5)	27	Water tanks/Dry spaces	+
9	Fuel oil lines	+ 3) 2)	28	Oil tanks (flash point > 60°C)	+ 2) 3)
10	Lubrication oil lines	+ 2) 3)			
11	Hydraulic oil	+ 2) 3)			
12	Thermal oil	+ 2) 3)			
Sea Water			Miscellaneous		
13	Bilge lines	+ 1)	29	Starting/control air	÷ (no)
14	Fire main and water spray	+ 3)	30	Service air (non-essential)	+
15	Foam systems	+ 3)	31	Brine	+
16	Sprinkler system	+ 3)	32	CO2 system	÷ (no)
17	Ballast system	+ 1)	33	Steam	÷ (no)
18	Cooling water system	+ 1)			
19	Tank cleaning services	+			
20	Non-essential system	+			

Slip-on joints allowed for systems marked + with limitations/remarks),

not allowed marked ÷ (no).

Limitations/remarks:

- 1) Inside machinery spaces of category A - only approved fire resistant type FP or RFP, max. size 219,1 mm.
- 2) Not inside machinery spaces of category A or accommodation spaces. May be accepted in other machinery spaces provided the joints are located in easily visible and accessible positions.
- 3) Approved fire resistant type FP or RFP only, max. size 219,1 mm.
- 4) Above free board deck only.
- 5) In pump rooms and open decks – only approved fire resistant type FP or RFP, max. size 219,1 mm.

When used for systems where vacuum may occur, such as bilge and ballast systems, due measures shall be taken to avoid that packing element is sucked through the gap between pipe ends.

Maximum working pressure and applicable sizes:

Type	Size	Pressure
Grip E	26,9 – 168,3 mm	16 bar
	180,0 – 219,1 mm	16 bar
	up to 273 mm	11 bar
	up to 323,9 mm	6,5 bar
	up to 355,6 mm	6,5 bar
	up to 406,4 mm	4,5 bar
Grip	26,9 – 168,3 mm	16 bar
	180,0 – 219,1 mm	10 bar
	up to 273 mm	5,5 bar
	up to 323,9 mm	3,0 bar
	up to 355,6 mm	2,7 bar
	up to 406,4 mm	2,5 bar

Each joint is to be hydraulic pressure tested to 1.5 times the working pressure.

Temperature range depending upon the sealing material:

Coupling	Sealing	Temperature
GRIP / GRIP E <180,0 mm	EPDM	-30 to 125 °C
GRIP / GRIP E ≥180,0 mm	EPDM	-20 to 80 °C
All types	NBR	-20 to 80 °C

The slip-on joints are not to be used in cargo holds, tanks, and other spaces which are not easily accessible.

EPDM is not to be used for hydrocarbon applications.

The joints are to be installed with minimum applied stud torque as stated in the manufacturer’s installation manual and be mounted according to the manufacturer’s written instructions.

**Type Approval documentation**

- NORMACONNECT Type GRIP / GRIP E Fitting Instruction dated IX/98
- Test reports on tests performed from 13<sup>th</sup> to 15<sup>th</sup> November 1996 witnessed by DNV.
- Test reports: 61/99, 54/99 65/99, 57/99 58/99, 60/99 dated February 17, 1999.
- Test reports: BSG 90804/1-4 dated October 21, 1999.
- Test report, ESN-01-6348, from testing performed on 2002-12-03 to 2002-12-05
- Internal instructions, doc. ref: LOG-4.15-106/D, QW-4.10-112/B, QW-PRFAN-NC-039/0, QW-PRFAN-WEP-Rohstoff-001/0,

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- Drawing nos: 0 578 9000 001 K dated 2000-05-24, 0 578 9000 002 K dated 2000-05-26, 0 578 8000 004 P dated 2000-05-29, 0 578 8000 005 P dated 2000-05-29, 0 578 8000 006 P dated 2000-05-29, 0 578 9000 003 L dated 2000-05-29
  - Fire test statement BWB-Kiel, dated 2008-08-05.
  - Pull-out test statement IMA-Dresden dated 2006-03-15
  - Report no. 9831-1-e, 2-e, 3-e, 4-e dated 2013-09-10
  - Test report on tests performed 2005-12-06/07/08 & 2006-02-28 witnessed by DNV
- Drawings FP:
- 0 578 4070 001/ 002/ 003
  - 0 578 3070 001/ 002/ 003
  - 0 579 4070 001/ 002/ 003
  - 0 579 3070 001/ 002/ 003

## Tests carried out

Visual inspection, Oil resistance test, Fatigue test, Hydrostatic pressure test using angular pipe ends, Burst test, Pneumatic leakage test under vacuum using angular pipe ends, Pull-out test, Type FP and RFP fire tested according to IACS P2.11 (corr. 1 2007 and ISO 19921, First Edition 2005-10-01, repeated assembly test.

## Marking of product

For traceability with this type approval the couplings are at least to be marked with:

- Manufacturer's name or trade mark
- Type designation

## Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform a periodical assessment – every second year and before the expiry date of this certificate - to verify that the conditions for the type approval are complied with and to witness burst testing of samples of couplings selected at random from stock or from the running production.

## END OF CERTIFICATE